Release June 2022

REFRIGERATION UNITS

ELBA Series

Cooling capacities from 100 to 400kW in Medium Temperature, up to 600kW for industrial version
Cooling capacities from 35 to 200kW in Low temperature, up to 300kW for industrial version

Enex presents ELBA, the new range of transcritical CO_2 refrigeration units, a synthesis of innovation, flexibility and energy saving. It is available in two dedicated versions: INDUSTRIAL and COMMERCIAL.

Enex has been the first company ever to develop CO_2 only solutions since 2004. CO_2 (R744) is a natural fluid with zero OPD, GWP = 1. Neutral refrigerant by excellence, CO_2 is neither toxic nor flammable: among natural gases it is in fact the one with fewer contraindications so that represents the perfect choice for the future, not subject to the F-gas regulation on fluorinated gases.

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INDUSTRIAL APPLICATIONS

The ELBA range is specially designed for large refrigeration systems.
The Industrial version is characterized by a robust frame and a resilient circuit, designed to ensure reliability and energy efficiency. Typical applications are as follows:

- Industrial refrigeration systems for distribution and logistics centers;
- Refrigeration unit for belt freezers in the food industry;
- Transformation production processes.

The refrigeration units of ELBA series represent the most effective solution to overcome the environmental problems related to synthetic refrigerants, harmful to the environment.

The image is for illustrative purpose
and it is referred to ELBA INDUSTRIALE
Unit type 6 + 4 + 3

COMMERCIAL APPLICATIONS

The refrigeration units of ELBA Commercial range are specifically designed for refrigeration of display cabinets and cold rooms in hypermarkets. In particular, given the specific characteristics of the environment in which these systems are installed, Enex provides numerous customization possibilities. The available options are:

- for medium temperature only;
- booster version with medium and low temperature, with auxiliary compressors for the recompression of the flash vapor;
- medium and low temperature version (MT, BT) with winter heat recovery and summer cooling, expansion energy recovery and overfeeding of the evaporators.

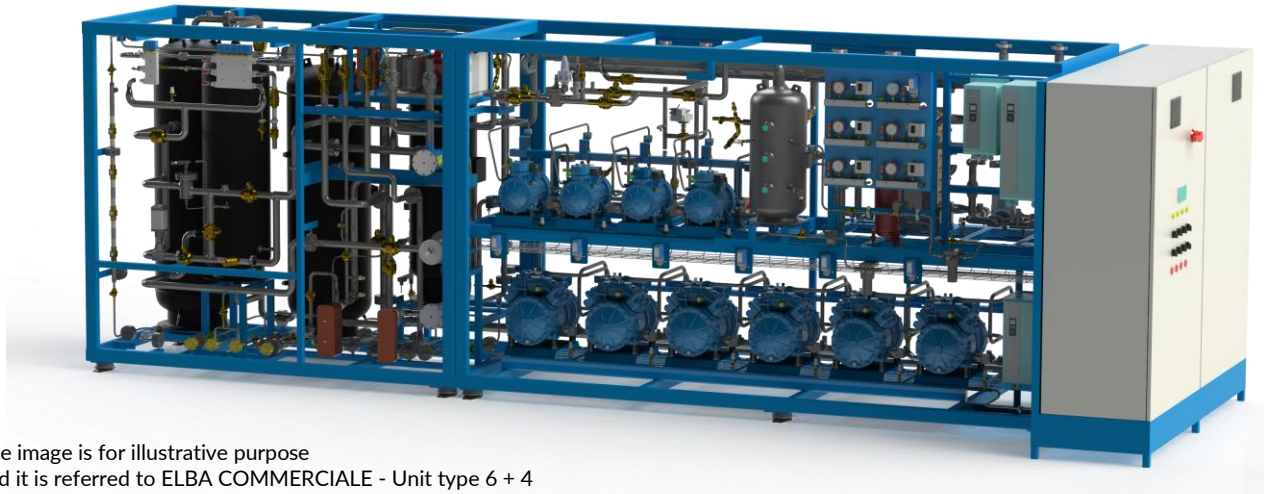
ELBA, using only CO_2, can be used without any legislative limitation and without the disadvantages associated with the use of synthetic refrigerants.

GENERAL TECHNICAL DATA

The ELBA range includes 12 sizes and a great variety of options. For these reasons, the technical data may vary according to the initial specifications provided and / or agreed with the customer.

Model		3.1.0 110 kW	3.1.3 110-35kW	3.1.3 150-35kW	3.2.3 150-35kW	4.1.0 200kW	4.1.3 200-50kW	4.2.4 250-50kW	4.2.4 300-60kW	5.2.3 380-30kW	5.2.3 500-50kW	6.2.3 590-50kW	6.2.5 600-200kW
Cooling Capacity Low Temperature (-30°C)	[kW]	-	33,0	35,7	35,7	-	52,5	50,5	63,2	33,0	76,4	76,4	213,0
Cooling Capacity Medium Temperature (-8°C)	[kW]	112,7	76,1	116,7	113,6	204,7	150,7	202,3	231,8	326,2	434,5	526,4	390,3
Electric Power Input	[kW]	57,3	66,7	90,4	89,1	107,4	126,2	146,9	173,0	209,0	289,0	338,6	384,4
Low Temperature Data													
Compressors number	[-]	-	3	3	3	-	3	4	4	3	3	3	5
Cooling capacity	[kW]	-	33,0	35,7	35,7	-	52,5	50,5	63,2	33,0	76,4	76,4	213,0
Medium Temperature Data													
Compressors number	[-]	3	3	3	3	4	4	4	4	5	5	6	6
Cooling capacity	[kW]	112,7	76,1	116,7	113,6	204,7	150,7	202,3	231,8	326,2	434,5	526,4	390,3
Auxiliary section													
Compressors number	[-]	1	1	1	2	1	1	2	2	2	2	2	2
Capacity required to the gas cooler	[kW]	171,7	179,6	247,4	243,0	314,9	336,0	406,7	476,5	601,5	812,1	954,7	1013,3
Connections piping diameters													
Suction Pipe Low Temperature	[mm]	-	35mm	35mm	35mm	-	42mm	42mm	42mm	35mm	42mm	60mm	60mm
Suction Pipe Medium Temperature	[mm]	35mm	35mm	42mm	42mm	48mm	42mm	48mm	60mm	60mm	60mm	60mm	60mm
Gas Cooler Supply Pipe	[mm]	1"	1"	1"	1"	1" 1/4	1" 1/4	1" 1/2	1" 1/2	2"	2"	2"	2"
CO_2 Liquind Line Pipe	[mm]	35mm	35mm	35mm	35mm	42mm	42mm	42mm	42mm	48mm	60mm	60mm	60mm
Tanks													
Liquid Receiver Volume	[litri]	320,0	320,0	350,0	350,0	450,0	450,0	450,0	575,0	575,0	660,0	920,0	920,0
Oil reserve Volume	[litri]	30,0	30,0	30,0	30,0	40,0	40,0	40,0	40,0	40,0	85,0	106,0	106,0
Sound Pressure Level (*)													
Unit (without ocnsidering the gas cooler)	[dB(A)]	<51	<51,5	<51,5	<52	<53	<53,5	<54,5	<55	<56	<58	<58,5	<59
Dimensions (**) (***)													
Lenght max	[mm]	5100	5100	5100	5100	5800	6000	6900	6900	7400	7400	7900	8200
Width max	[mm]	1200	1600	1600	1600	1600	1600	2200	2200	2400	2400	2600	2600
Height max	[mm]	2400	2400	2550	2550	2300	2300	2450	2450	2600	2600	2600	2600
Estimed Weight	[kg]	3000	3200	3500	3800	3500	3700	5500	5700	6500	7200	7800	8100

NOTES:
The data expressed are referring to condition with air ambient temperature 35°C, discharge pressure in medium temperature condition 92 bar and gas cooler outlet temperature 37 ° C.
* Estimated Value at 10m from the sound source. It does not include the sound levels of the gas cooler.
** Dimensions does not include the panels of the unit (accessory not included in the standard version)
*** The dimensions refer to the presence of the electrical panel. For more details on the dimensions of the cooling unit only without electrical panel, please refer to the dedicated technical files.



The image is for illustrative purpose
and it is referred to ELBA COMMERCIALE - Unit type 6 + 4

SPECIFICATION DESCRIPTION OF THE STANDARD UNITS

Structure: frame in welded steel and painted with epoxy powders RAL5008 (other colors on request);

Covering panels (on request): in painted galvanized sheet or painted aluminum, with soundproofing coating;

Piping: in AISI304L TIG welded stainless steel. Forged stainless steel fittings. The pipes are clamped with industrial type fixings. Cold pipes are thermally insulated with Armaflex insulation or equivalent with closed cells and low vapor permeability;

Control valves: stainless steel step motor, mounted with shut-off valves and with by-pass;

Exchangers: the heat exchangers for heat recovery or installed for anti-liquid protection functions are of the AISI 316L stainless steel plate type. The regenerative exchanger is of the tube bundle type with high pressure inside the tubes. Coating with fat bandage, vapor barrier and closed cell rubber insulation. A standard emergency bypass is provided;

Tanks: in painted carbon steel. Cold storage tanks are insulated as described below. Standard design pressure 60 bar (80 bar on request - other possible options);

Insulation: Armaflex or equivalent with closed cells, combined with protection, for cold parts, with fat bandage and vapor barrier;

Condenser / gas cooler (optional supply): pipes and bends in K65, design pressure 130 bar. Geometry 25 x 22 mm (Tubes x Rows Pitch);

Liquid ejector (optional): according to the system concept developed by Enex and Enex patent, to allow evaporators overfeeding to be regulated. Aluminum block with removable cartridge;

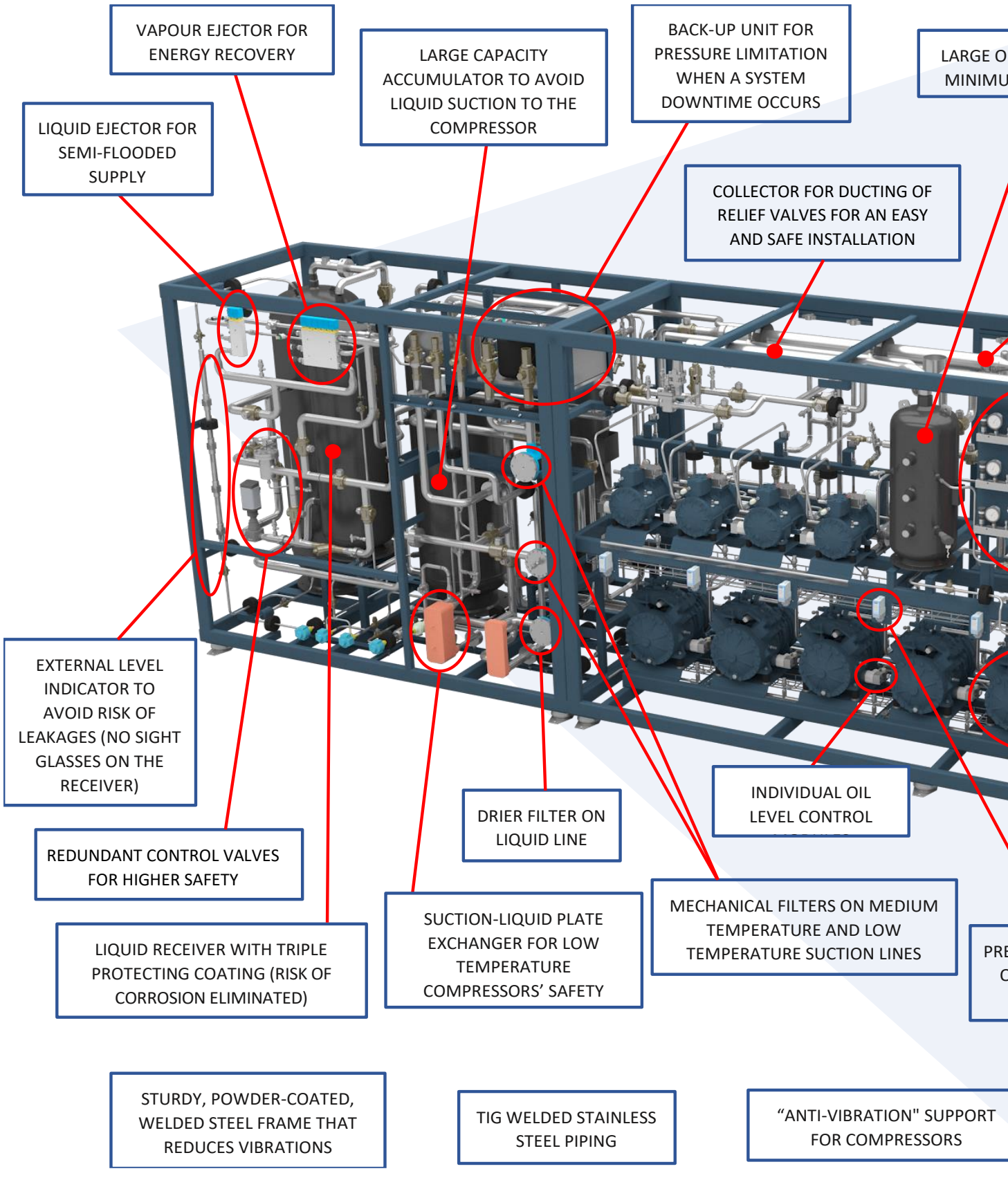
The system solution with flash vapor recompression (optional), according to the method developed by Enex (patent);

Vapor ejectors (optional): according to the system concept developed by Enex, in combination with auxiliary compressors. Aluminum block construction with removable cartridge. Electrical panel with degree of protection IP54 (galvanized sheet painted RAL 7035 textured) or IP67 (stainless steel) with controllers of different brands;

Compressors: optimized for operation under specific conditions, with manifold obtained by casting, designed to limit oil temperature, with mobile mechanical parts of robust construction which have been tried out for over 10 years of reliable and trouble-free operation. In particular, hardening pin treated with carbon deposit and very thick connecting rod. Forced lubrication with pump also for piston pin and connecting rod eye;

PAG oil for longer life.

DISTINCTIVE FEATURES AND BENEFITS OF THE RANGE



ENEX PATENTS & INNOVATIONS

Enex developed numerous innovations in the field of CO_2 refrigeration, some of which have given rise to important patents such as the "overfeeding of evaporators" and the "re-compression of flash vapor". Elba control units can be equipped with these exclusive innovations on request.

enJECTOR®

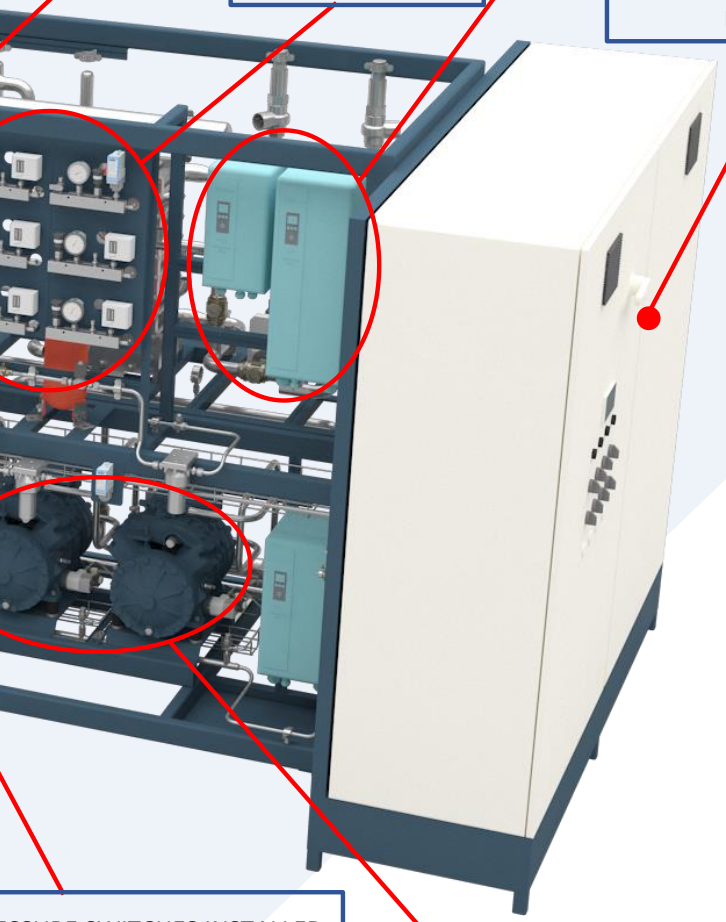
IL RECEIVER WITH
M LEVEL SWITCH

REGENERATIVE HEAT EXCHANGER BETWEEN FLASH GAS AND HIGH TEMPERATURE LINE TO INCREASE THE EFFICIENCY OF THE UNIT

INVERTER IP55

CONSOLE WITH PRESSURE GAUGES AND PRESSURE SWITCHES

ELECTRICAL PANEL WITH INDICATOR LIGHTS AND DISPLAY MOUNTED ON THE FRONT SIDE



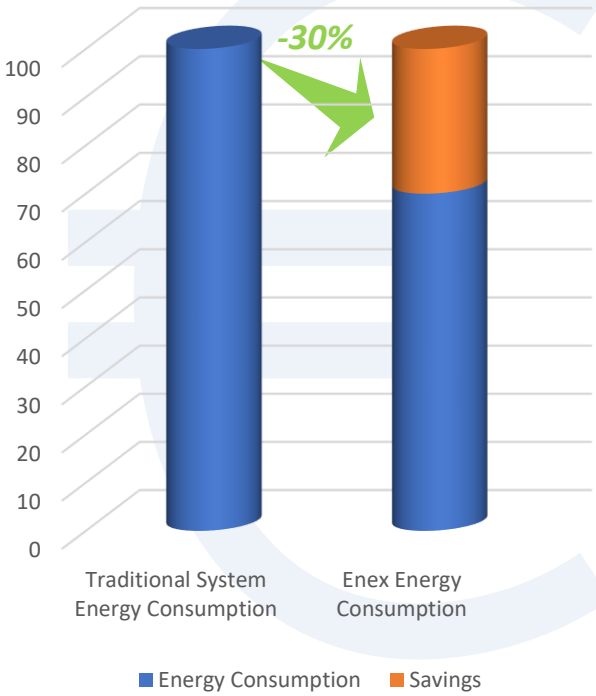
ESSURE SWITCHES INSTALLED
ON HIGH PRESSURE SIDE OF
EACH COMPRESSOR

AUXILIARY COMPRESSORS FOR FLASH GAS RECOMPRESSION

HIGH EFFICIENCY OIL SEPARATION

ROBUST PIPE BRACKETS TO AVOID RISK OF BREAKAGE

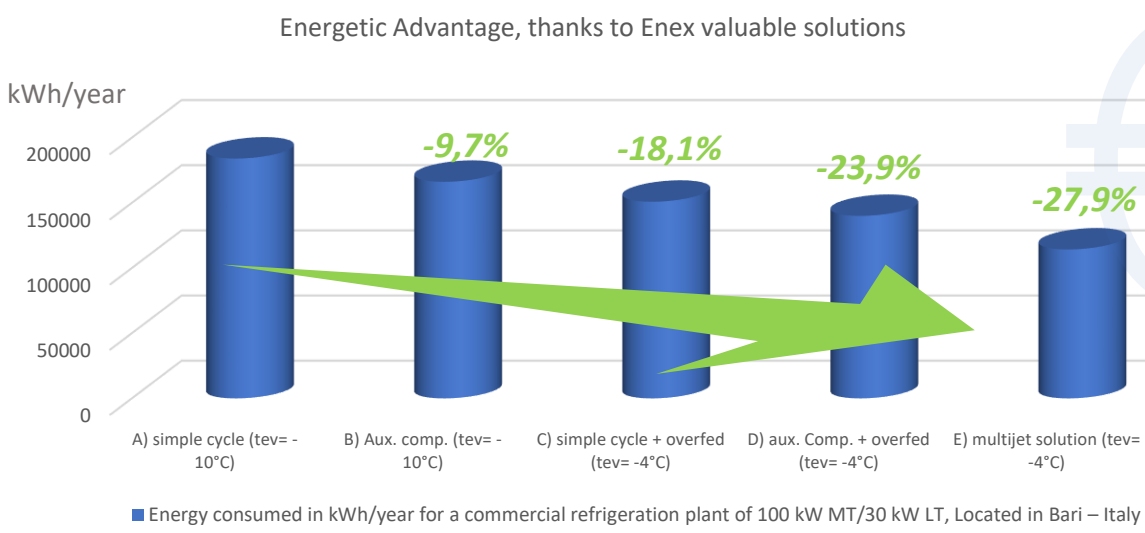
Energetic Advantage obtainable, thanks to Enex valuable solutions



TECHNOLOGICAL ADVANTAGES ARISING FROM ENEX KNOW HOW

- High efficiency: optimal realization of the booster cycle with insertion of intercooler and regenerative heat exchanger;
- Robust frame and compact design;
- Stainless steel pipes;
- Automatic backup of critical components for stable and continuous operation;
- Easily accessible components;
- Large liquid receiver;
- Complete ducting of the relief valve discharge;
- Plug and play unit;
- Standard version: design pressure 60 bar on the LP / IP-130 bar on the HP side;
- Low noise;
- CE / PED certification Cat. IV.

ADVANTAGES IN THE REDUCTION OF ENERGY CONSUMPTION



OPTIONS

- Heat recovery for space and / or sanitary water heating
- Different LP side design pressure
- Backup cooling unit
- Visual indicator of the liquid level
- Liquid level transmitter
- Integrated water condenser
- EJECTOR® for greater efficiency and increased capacity
- Economizer for efficient operation in high temperature environments, made with separate and independent auxiliary compressors

Additional options and integrated versions suitable for the specific needs of Customers system can be developed on request.

INNOVATION AS ENERGY

2004
Foundation year

>3000
Transcritical systems installed

25
Countries in the world where Enex is present

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